RESULTS IN A TRIAL OF SYSTEM OF TEFF INTENSIFICATION (STI) AT DEBRE ZEIT, ETHIOPIA

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Teff -- *Eragrostis tef* (Zucc.) Trotter -- is a small-seeded cereal indigenous to Ethiopia. In 2008, the area covered by this crop was 2.5 million hectares. It is the preferred food staple for over 50 million Ethiopians. Teff has either white and brown seeds, with the white one most preferred. The seeds are milled into flour which is then mixed with water, fermented, and then made into a flat and spongy bread, crepe-like pancake, called " Enjara" which is commonly eaten with a meat or vegetarian stew.

The national average yield for teff is currently **below 1 ton per hectare**. Any technology that will improve teff yields will greatly benefit teff farmers and the country at large. Something which we are calling the System of Teff Intensification (STI) was therefore tested with this aim in mind.

Following the principles of the System of Rice Intensification (SRI) widely publicized by Professor Norman Uphoff of Cornell University, the first trial of System of Teff Intensification (STI) was conducted at Debre Zeit Agricultural Research Center, Ethiopia during the July-October 2008 crop season. The most common way of establishing teff is by broadcasting the very small seed at the rate of 25-50 kg/ha.

The first objective of STI trials was to find out whether teff yields could be improved by changing these planting methods. Teff seedlings were grown on a wooden flat for two weeks and then transplanted into the field (heavy clay black soil) at a spacing of 20cms x 20cms. The plot size was 2meters x 5 meters and replicated 3 times. The standard broadcasting method was used as a check (control). The treatments included two varieties of seed: seeds untreated with fertilizer, and seeds coated (pelleted)with a fertilizer containing nitrogen, phosphorus and zinc (source: YARA). The results of the first experiment are shown in the following table. Subsequent trials with a variety of fertilization will be reported at a later date.

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Teff Trials with Pelletting (Zn + NP = Synergize) and Spacing , Debre Zeit, Ethiopia, 2008

VARIETY	SOWING METHOD	PELLETING PRACTICE	YIELD (Kg/Ha)
Cross 37	Broadcast	None	1,014
	Broadcast	Yes	483
	20cm x 20cm	None	3,390
	20cm x 20 cm	Yes	5,109
Cross 387	Broadcast	None	1,181
	Broadcast	Yes	1,036
	20 x 20	None	4,142
	20 x20	Yes	4,385

The results of the first STI experiment are very encouraging. The difference between broadcasting and transplanting was huge. Plot yields for the broadcasted plots were 500-1,200 kg/ha while the yield from the transplanted plots was 3,400 – 5,100 kg/ha. This is a four- fold increase. Pelleting the seeds with zinc-containing fertilizer had a very positive response in the transplanted teff whereas there was little or even negative effect in the broadcasted plots.

The main effect of transplanting (as indicated in the following pictures) was in increasing tiller number, producing strong and fertile tiller culms, and in increasing number of seeds/panicle. A similar experiment was repeated using large pots in a lath house during the 2009 off-season even better results. These results will be reported together with those obtained in the main crop season of 2009.

Figures: Photos showing tillering potential of transplanted teff